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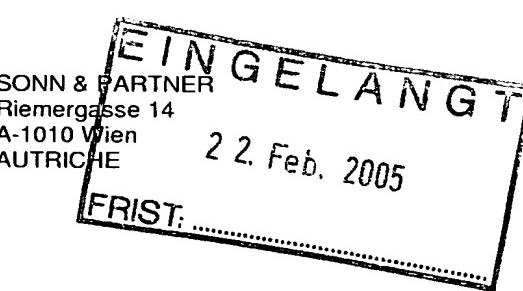
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17 February 2005 (17.02.2005)

Applicant's or agent's file reference
R 41369

International application No.
PCT/AT2003/000150

Applicant
FRONIUS INTERNATIONAL GMBH et al

To:



1. Transmittal of the translation to the applicant.

The International Bureau transmits herewith a copy of the English translation made by the International Bureau of the international preliminary examination report established by the International Preliminary Examining Authority.

2. Transmittal of the copy of the translation to the elected Offices.

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following elected Offices requiring such translation:

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3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report.

It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.

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Translation

PATENT COOPERATION TREATY



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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference R 41369	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/AT2003/000150	International filing date (day/month/year) 26 May 2003 (26.05.2003)	Priority date (day/month/year) 03 July 2002 (03.07.2002)
International Patent Classification (IPC) or national classification and IPC B23K 11/30		
Applicant FRONIUS INTERNATIONAL GMBH		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 10 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

Date of submission of the demand 28 January 2004 (28.01.2004)	Date of completion of this report 23 August 2004 (23.08.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/AT2003/000150

I. Basis of the report

1. With regard to the elements of the international application:^{*}

- the international application as originally filed
 the description:

pages _____ 1-15 _____, as originally filed
 pages _____ _____, filed with the demand
 pages _____, filed with the letter of _____

- the claims:

pages _____ _____, as originally filed
 pages _____, as amended (together with any statement under Article 19)
 pages _____, filed with the demand
 pages _____ 1-21 _____, filed with the letter of 30 July 2004 (30.07.2004)

- the drawings:

pages _____ 1/3-3/3 _____, as originally filed
 pages _____ _____, filed with the demand
 pages _____, filed with the letter of _____

- the sequence listing part of the description:

pages _____ _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
 the language of publication of the international application (under Rule 48.3(b)).
 the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
 filed together with the international application in computer readable form.
 furnished subsequently to this Authority in written form.
 furnished subsequently to this Authority in computer readable form.
 The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
 The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages _____
 the claims, Nos. _____
 the drawings, sheets/fig. _____

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International Application No.
PCT/AT 03/00150

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: IV.3

This report makes reference to the following documents :

- D1: JP 08-118037 A (mentioned in the application)
- D2: US 5 552 573 A (mentioned in the application)
- D3: JP 06-344149 A
- D4: JP 10-029071 A (mentioned in the application)
- D5: US 5 973 287 A.

IV.1 This international application contains several groups of inventions:

1) Claims 1-8

Bimetallic protective strip for electrodes for resistance welding

2) Claims 9-18

Pressure element for holding down workpieces or guiding protective strips for electrodes

3) Claims 19-21

Resistance welding method with mechanical detection of when the tool touches the workpiece.

IV.2 JP 08-118037 (D1) discloses a device for protecting an electrode during resistance welding of workpieces according to the preamble of claim 1, a spot welding tool for the resistance welding of workpieces according to the preamble of claim 10 with a pressure element for holding down the workpieces, a spot welding tool for the resistance welding of workpieces according to the preamble of claim 11 with a pressure element for guiding a strip for protecting electrodes, and a resistance

INTERNATIONAL PRELIMINARY EXAMINATION REPORTInternational Application No.
PCT/AT 03/00150**Supplemental Box**
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: IV.3

welding method according to the preamble of claim 20 with a movable element that extends past the electrode.

IV.2.1 D1 does not disclose the following features of claim 1: "the strip consists of at least two superimposed metal strips of different materials, the metal strips being connected to each other exclusively in an interlocking manner". Therefore, these features are special technical features (STF1) of claims 1-8 within the meaning of PCT Rule 13.2 that solve the following problem:

reducing electrode wear.

IV.2.2 D1 does not disclose the following features of claims 9 and 10: "pressure element arranged on the electrode in the area of the electrode cap". Therefore, these features are special technical features (STF2) of claims 9-18 within the meaning of PCT Rule 13.2 that solve the following problem:

providing a more compact design of the spot welding tool to enable workpieces with complex geometry to be welded.

IV.2.3 D1 does not disclose the following features of claim 19: "that the element detects when the spot welding tool touches the workpiece, and that when such contact is detected, the element is displaced in relation to the electrode until the electrode touches the workpiece". Therefore, these features are special technical features (STF3) of claims 19-

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: IV.3

21 within the meaning of PCT Rule 13.2 that solve the following problem:

detecting the approach of the electrode towards the workpiece and its contact therewith.

- IV.3 Since STF1-STF3 are different and also solve different problems, they cannot be regarded as the same or corresponding special technical features, and the requisite technical relationship among the individual inventions as stipulated in PCT Rule 13.2 is not established.
- IV.4 Therefore, the application contains three groups of inventions that are not linked by a single general inventive concept (PCT Rule 13.1).

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/AT 03/00150

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	1-8, 17-21	YES
	Claims	9-16	NO
Inventive step (IS)	Claims	1-8, 18	YES
	Claims	9-17, 19-21	NO
Industrial applicability (IA)	Claims	1-21	YES
	Claims		NO

2. Citations and explanations**V.1 Observations**

V.1.1 The following two embodiments in dependent claim 5 lack clarity, because they contradict the feature "connected to each other in an exclusively interlocking manner" of independent claim 1 with their wording as follows: "connected to each other by bonding [...] or welding".

V.1.2 Claim 2 lacks clarity because the feature "little tendency to bond" does not make it clear to a person skilled in the art what materials can be used to achieve this effect.

V.2 Claim 1.

D2 is regarded as the prior art closest to the subject matter of claim 1. It discloses (the reference signs in parentheses refer to D2) a

device for protecting an electrode (1) during resistance welding of workpieces, in particular metal sheets (11, 12), with a strip (9, 10) arranged above the electrode (1), preferably displaceably in relation thereto, the strip (9, 10) consisting of at least two metal strips (9a, 9b, 9c) of different superimposed materials, from which the subject

matter of claim 1 differs in that the metal strips are connected to each other exclusively in an interlocking manner.

Therefore, the subject matter of claim 1 is novel (PCT Article 33(2)).

The problem to be solved by the present invention can therefore be regarded as that of providing strips with several combinations of materials in a simple manner without making it necessary to have a supply of strips with all possible combinations of materials.

The solution to the problem of interest as proposed in claim 1 of the present application involves an inventive step for the following reasons (PCT Article 33(3)):

The prior art does not render it obvious to combine different strips in an interlocking manner, which can be done on site, with little advance notice, and using relatively simple tools, thereby enabling the supply of strips to be restricted to basic materials.

V.3 Claims 2-8 are dependent on claim 1 and therefore likewise meet the PCT requirements for novelty and inventive step.

V.4 Claim 9

D4 discloses (the reference signs in parentheses refer to D4):

a spot welding tool for the resistance welding of workpieces, in particular metal sheets (101a, 101b), with at least one electrode (8, 9), a pressure element (86a, 67a) being provided on the

electrode (4) in the area of the electrode cap (since the claim does not indicate any limits of the area, the pressure elements (86a, 76a) are in the area of the electrode cap) to hold down the workpieces; in particular metal sheets (101a, 101b), in particular (features following expressions such as "in particular" are not regarded as restrictive) to prevent process-related bending or warping of the workpieces, in particular metal sheets (101a, 101b).

Therefore, D4 discloses all of the features of this claim, and claim 9 lacks novelty within the meaning of PCT Article 33(2).

V.5 Claim 10

D4 also discloses a:

spot welding tool for the resistance welding of workpieces, in particular metal sheets (101a, 101b), with at least one electrode (8, 9) and a winding device for winding and unwinding a strip (102a, 102b) for protecting the at least one electrode (8, 9), a pressure element (86a, 67a) being arranged on the electrode (8, 9) in the area of the electrode cap, said pressure element (86a, 67a) having a passage (90a) for the strip (102a, 102b) and being movably connected thereto in the longitudinal direction of the electrode (8, 9) such that the strip (102a, 102b) can be moved away (see figure 6) from the electrode (8, 9).

Therefore, D4 discloses all of the features of this claim, and claim 9 lacks novelty within the meaning of PCT Article 33(2).

V.6 Claims 11-17

V.6.1 Claims 11-16: D4 discloses all of the features of these claims, which therefore lack novelty.

V.6.2 Claim 17: Electrodes for resistance welding are produced from materials with as little electrical conductivity as possible. Therefore, D4 discloses implicitly that the pressure element is made of a metal with higher electrical conductivity. The claimed annular form is one of several possibilities without an unforeseeable technical effect, and therefore claim 17 is not inventive.

V.7 Claim 18:

The subject matter of claim 18 differs from the spot welding tool known from D4 in that the pressure element is designed as a sensor for detecting when the spot welding tool touches the workpiece.

Therefore, the subject matter of claim 18 is novel (PCT Article 33(2)).

Although pressure sensors for spot welding tools are known (see D5, for example), it is not obvious to integrate them into a pressure element for holding down the workpieces (claims 9 and 18) or into a pressure element for guiding strips in order to protect electrodes (claims 10 and 18).

Consequently, claim 18 involves an inventive step (PCT Article 33(3)).

V.8 Claim 19:

The subject matter of this claim does not involve an inventive step within the meaning of PCT Article 33(3).

D5 is regarded as the prior art closest to the

subject matter of claim 19. It discloses a method for resistance welding, wherein two workpieces (30, 30') [...] are welded together using spot welding tools, at least two electrodes (15A, 15B), with the workpieces therebetween [...], being pressed against each other and energy acting thereupon, a pressure element (24a) that extends past the electrode and is movably arranged on an electrode holder detecting when the spot welding tool touches the workpiece, and when contact is detected, the element being displaced in relation to the electrode until the electrode touches the workpiece,

from which the subject matter of claim 19 differs in that

the pressure element is arranged on the electrode rather than on the electrode holder. This, however, concerns only a minor structural modification of the method according to claim 19 of the kind that a person skilled in the art routinely makes based on familiar considerations, especially since the resulting advantages are readily foreseeable. Consequently, the subject matter of claim 19 likewise lacks an inventive step.

V.9 Claims 20 and 21

These claims are not inventive, since their subject matter is likewise rendered obvious by D5.